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(54) **Eyelash curling apparatus**

Gerät zum Wölben von Augenwimpern

Appareil pour onduler les cils

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## Description

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

**[0001]** The present invention relates to an eyelash curling apparatus, and in particular to an improved eyelash curling apparatus which is capable of more rapidly heating a heating member, visually checking a heating state, and more easily and naturally curling eyelashes after a mascara is hardened, for thus improving the quality and reliability of the products, and in addition it is possible to more easily curl eyelashes for short time, visually checking the malfunction of the system, preventing an over electric power consumption, and indicating the timing of battery exchange.

#### 2. Description of the Conventional Art

**[0002]** Generally, a conventional eyelash curling apparatus is basically directed to curling eyelashes by using a curling device, a brush with a curling liquid such as mascara, a tweezers, etc., for thus applying the curling liquid to the eyelashes. When using an eyelash tweezers, over pressure may be applied to the eyelashes, for thus pulling out the eyelashes. In addition, when curling the eyelashes by using a heated metal such as a metallic needle, the eyelashes may be over-heated and the skin near the eyelashes may be damaged. Furthermore, when using the curling liquid, the eyelashes may be too hardened, so that it is impossible to naturally curl the eyelashes.

**[0003]** In order to overcome the above-described problems, Korean Patent Application (96-24771) invented by the same inventor of this invention disclosed an eyelash curling apparatus.

**[0004]** Figure 1 is an exploded perspective view illustrating a conventional eyelash curling apparatus, and Figure 2 is a cross-sectional view illustrating a conventional eyelash curling apparatus.

**[0005]** As shown therein, the conventional eyelash curling apparatus includes a main body 1 having a handle 10 and a cover 13. A battery 12 is disposed within the handle 10 of the main body 1. An operation switch 11 disposed in an outer circumferential surface of the main body 1 is connected with a heating tube 20. An indication lamp 23 is disposed in one end portion of the heating tube 20. A heating member 21 having a heating wire which is spirally wound onto the spiral brush 22 is coated, for thus forming the eyelash curling apparatus.

**[0006]** However, the conventional eyelash curling apparatus has the following disadvantages.

**[0007]** First, it is possible to use the eyelash curling apparatus after the heating member 21 and the brush 22 are substantially heated, for thus causing a long waiting time for a curling.

**[0008]** Second, since the brush 22 is made in a

straight line form, it is impossible to accurately match the brush 22 with a curved portion of eyes and the eyelashes. Namely, people has different curved portions of eyes and the eyelash.

**[0009]** Third, since the brush 22 is formed to be threaded, the eyelash may partially contact with the heating member 21, so that it is impossible to uniformly curl the eyelashes.

**[0010]** Fourth, since the conventional eyelash curling apparatus is directed to heating the brush 22 by using the heating member 21, a user must check by using hands whether it can be used., for thus causing inconvenience.

**[0011]** Fifth, since the brush 22 has only a function of heating for softening the mascara applied to the eyelashes and then curling the eyelashes, the conventional eyelash curling apparatus has limited functions, for thus restricting the usage range of the system.

### 20 SUMMARY OF THE INVENTION

**[0012]** Accordingly, it is an object of the present invention to provide an eyelash curling apparatus which overcomes the aforementioned problems encountered in the conventional art.

**[0013]** It is another object of the present invention to provide an improved eyelash curling apparatus which is capable of more rapidly curling eyelashes.

**[0014]** It is still another object of the present invention to provide an improved eyelash curling apparatus which is capable of more rapidly curling eyelashes.

**[0015]** It is still another object of the present invention to provide an improved eyelash curling apparatus which is capable of more rapidly hardening a mascara and continuously maintaining the curled eyelashes in a curled form for long time, for thus being well adaptable to any types of eyelashes.

**[0016]** It is still another object of the present invention to provide an improved eyelash curling apparatus which is capable of enhancing the convenience and the reliability of the product and improving the quality of the system.

**[0017]** To achieve the above objects, there is provided an improved eyelash curling apparatus which includes a silicon portion being made of a heat-sensitive coating material lying underneath a heating member, wherein the brush includes the heating member, on which a heating wire is wound, a curved portion which is formed to be matched with curved portions of eyes and eyelashes, with a flat surface being formed in one side of the brush, and with safety protrusions being formed in the brush so as to partially expose the heating member, and with an eyelash contact portion being protrudingly formed on the longitudinal side edges of the brush, wherein the eyelash curling apparatus includes a main body having

a handle portion and a protection cap, a battery disposed within the handle portion of the main body, an operation switch disposed in an outer circumferential surface of the main body, a heating tube connected to the operation switch, and an indication lamp disposed in an upper portion of the heating tube.

**[0018]** Additional advantages, objects and other features of the invention will be set forth in part in the description which follows and in part will become apparent to those having ordinary skill in the art upon examination of the following or may be learned from practice of the invention. The objects and advantages of the invention may be realized and attained as particularly pointed out in the appended claims.

#### BRIEF DESCRIPTION OF THE DRAWINGS

**[0019]** The present invention will become more fully understood from the detailed description given hereinbelow and the accompanying drawings which are given by way of illustration only, and thus are not limitative of the present invention, and wherein:

Figure 1 is an exploded perspective view illustrating a conventional eyelash curling apparatus;

Figure 2 is a cross-sectional view illustrating a conventional eyelash curling apparatus;

Figure 3 is an exploded perspective view illustrating an eyelash curling apparatus according to the present invention;

Figure 4 is a cross-sectional view illustrating an inside construction of an eyelash curling apparatus according to the present invention;

Figure 5 is a cross-sectional view taken along line A-A' of Figure 3;

Figure 6 is a perspective view illustrating a tip portion of an eyelash curling apparatus according to the present invention;

Figure 7 is a cross-sectional view taken along line B-B' of Figure 3 in order to illustrate a tip portion of an eyelash curling apparatus according to the present invention; and

Figure 8 is a circuit diagram of a circuit of an eyelash curling apparatus according to the present invention.

#### DETAILED DESCRIPTION OF THE INVENTION

**[0020]** Figure 3 is an exploded perspective view illustrating an eyelash curling apparatus according to the present invention, Figure 4 is a cross-sectional view illustrating an inside construction of an eyelash curling apparatus according to the present invention, Figure 5 is a cross-sectional view taken along line A-A' of Figure 3, Figure 6 is a perspective view illustrating a tip portion of an eyelash curling apparatus according to the present invention, and Figure 7 is a cross-sectional view taken along line B-B' of Figure 3 in order to illustrate a tip portion

of an eyelash curling apparatus according to the present invention.

**[0021]** As shown therein, a main body 100 includes a handle 102 and a protection cap 110. A battery 108 is disposed within the handle 102 of the main body 100. A heating tube 112 is electrically connected with an operation switch 106 disposed in an outer circumferential surface of the main body 100. An indication lamp 122 is disposed in an upper portion of the heating tube 112. A brush 104 includes a heating member 114 which is wound by a heating wire, for thus forming an eyelash curling apparatus, with a silicon portion 118 having a lower heat transfer rate being arranged in the heating member 114. Therefore, the heating member maintains a temperature of 80°C and 120°C, and the silicon portion 118 is heated to a temperature of 40°C to 60°C.

**[0022]** In addition, the brush 104 including the heating member 114 has a curved portion matching with the curved portion of eyes and eyelashes of a user. A predetermined area is defined on one side of the silicon portion 118 for more easily curling the eyelashes. Safety protrusions 116 are formed in the brush 104 so as to expose the heating member 114. An eyelash support portion 120 is formed by protrudely forming the surface of the brush 104. As shown in Figure 5, the indication lamp 122 indicates whether the system is in operation. The heating wire is preferably designed to be operated at current of 0.3A to 1A. In addition, it is possible to use the system at 1.1V and for 100 minutes by controlling the length of the heating wire. In addition, the indication lamp 122 may include a circuit for repeatedly turning on/off the lamp, and functions for changing the color thereof and indicating the exchange of the battery.

**[0023]** In addition, there may be provided a circuit for maintaining the temperature of the heating material at 80°C to 120°C.

**[0024]** Figure 5 is a cross-sectional view taken along line A-A' of Figure 3, Figure 6 is a cross-sectional view taken along line B-B' of Figure 3, Figure 7 is a perspective view illustrating a tip portion of an eyelash curling apparatus according to the present invention, and Figure 8 is a circuit diagram of a circuit of an eyelash curling apparatus according to the present invention.

**[0025]** As described above, the eyelash curling apparatus according to the present invention is basically directed to forming the brush 104, which has the heating member 114 disposed on the silicon portion 118, the outer surface of which heating member 114 is coated with a heat sensitive coating material, for matching with the curved portion of eyes and eyelashes, whereby it is possible to naturally curl the eyelashes. In addition, the safety protrusions 116 are formed so as to expose the heating member 114, so that it is possible to satisfy a user's desire having different curved portion of eyes and eyelashes. In addition, the eyelash curling can be performed for short time by rapidly heating the heating member within a few seconds. The heating state can be visually checked by applying the silicon portion 118

which is made of a heat sensitive material on the outer circumferential surface of the heating member 114. Since there is provided the eyelash support portion 120 by protrudely forming the brush 104, it is possible to more easily harden the eyelash, for thus naturally supporting the eyelash and curling for any types of eyelashes. Since the indication lamp 122 is disposed in the main body 100, if there is an operational problem in the system, it is possible to easily check such problem. Moreover, the heating wire is designed to be operated at 0.3A to 1A, for thus preventing the electric power consumption. It is possible to use the system at 1.1V and for 100 minutes by elongating the heating wire. In addition, it is possible to indicate the timing of battery exchange by disposing a circuit for repeatedly turning on/off the indication lamp or by changing the color of the lamp, whereby it is possible to improve the reliability of the product and enhance the quality of the product. In addition, the temperature of the heating member is maintained at 80°C to 120°C.

**[0026]** As described above, the eyelash curling apparatus according to the present invention which can be used for any type of curved portion of eyes and eyelashes by providing a curved brush which matches with the curved portion of eyes and eyelashes during a curling operation, which is capable of more rapidly curling eyelashes, more rapidly hardening a mascara and continuously maintaining the curled eyelashes in a curled form for long time, for thus being well adaptable to any types of eyelashes, and enhancing the convenience and the reliability of the product and improving the quality of the system.

**[0027]** Although the preferred embodiments of the present invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope of the invention as recited in the accompanying claims.

#### Claims

1. An eyelash curling apparatus including a main body (100) having a handle portion (102) and a protection cap (110), a battery (108) disposed within the handle portion (102) of the main body (100), an operation switch (106) disposed in an outer circumferential surface of the main body (100), a heating tube (112) connected to the operation switch (106), and an indication lamp (122) disposed in an upper portion of the heating tube (112), and a brush (104), **characterized in that** a silicon portion being made of a heat-sensitive coating material lying underneath a heating member (114) is provided, and the brush (104) includes the heating member (114), on which a heating wire is wound, a curved portion which is formed to be matched with curved portions of eyes and eyelash-

es, with a flat surface being formed in one side of the brush (104), and with safety protrusions (116) being formed in the brush (104) so as to partially expose the heating member (114), and with an eyelash contact portion (120) being protrudely formed on the longitudinal side edges of the brush (104).

2. The eyelash curling apparatus of claim 1, wherein the temperature of the heating member (114) disposed in the brush extending from the heating tube (112) in the main body (100) is maintained at 80°C to 120°C.
3. The eyelash curling apparatus of claim 1, further comprising a silicon portion (118) formed in the upper portion of the brush extending from the heating tube (112) and made of a heat sensitive material and having a low heat transfer rate, so that the color of the silicon portion is changed when the heating member (114) exceeds a predetermined temperature.
4. The eyelash curling apparatus of claim 1, further comprising an indication lamp disposed inside the main body (104) for indicating a malfunction of the system.
5. The eyelash curling apparatus of claim 1, wherein said heating wire is designed to be operated at 0.3A to 1A.
6. The eyelash curling apparatus of claim 1, wherein said heating member (114) can be used at 1.1V and for more than 100 minutes by controlling the length of the heating wire.
7. The eyelash curling apparatus of claim 1, further comprising a circuit for repeatedly turning on/off the indication lamp (122) for indicating the timing of battery exchange.
8. The eyelash curling apparatus of claim 1, further comprising a circuit for changing the color of the indication lamp.

#### Patentansprüche

1. Wimpernbiegevorrichtung, die umfasst: einen Hauptkörper (100), der einen Griffabschnitt (102) und eine Schutzkappe (110), eine Batterie (108), die innerhalb des Griffabschnitts (102) des Hauptkörpers (100) angeordnet ist, einen Betriebsschalter (106), der sich in der äußeren Umfangsfläche des Hauptkörpers (100) befindet, ein Heizrohr (112), das mit dem Betriebsschalter (106) verbunden ist, und eine Anzeigelampe (122), die sich in einem oberen Abschnitt des Heizrohrs (112) befin-

det, und eine Bürste (104) aufweist,  
dadurch gekennzeichnet, daß

ein Siliciumabschnitt vorgesehen ist, der aus einem wärmeempfindlichen Beschichtungsmaterial besteht, das unter einem Heizelement (114) angeordnet ist, und die Bürste (104) das Heizelement (114) enthält, um das ein Heizdraht gewickelt ist, ein gekrümmter Abschnitt so ausgebildet ist, daß er mit den gekrümmten Abschnitten der Augen und der Wimpern übereinstimmt, wobei eine flache Oberfläche an einer Seite der Bürste (104) ausgebildet ist und Sicherheitsvorsprünge (116) in der Bürste (104) so ausgebildet sind, daß das Heizelement (114) teilweise freigelegt ist, und wobei ein Wimpernkontaktabschnitt (120) an den Längsseitenkanten der Bürste (104) hervorragend ausgebildet ist.

2. Wimpernbiegevorrichtung nach Anspruch 1, wobei die Temperatur des Heizelements (114), das in der Bürste so angeordnet ist, daß es sich vom Heizrohr (112) in den Hauptkörper (100) erstreckt, zwischen 80 und 120 ° C aufrechterhalten wird.
3. Wimpernbiegevorrichtung nach Anspruch 1, die ferner einen Siliciumabschnitt (118) umfaßt, der im oberen Abschnitt der Bürste ausgebildet ist, der sich vom Heizrohr (112) erstreckt und aus einem wärmeempfindlichen Material besteht und eine niedrige Wärmeübertragungsrate aufweist, so daß sich die Farbe des Siliciumabschnitts (118) ändert, wenn das Wärmeelement (114) eine vorgegebene Temperatur übersteigt.
4. Wimpernbiegevorrichtung nach Anspruch 1, die ferner eine Anzeigelampe umfaßt, die zur Anzeige einer Funktionsstörung des Systems innerhalb des Hauptkörpers (100) angeordnet ist.
5. Wimpernbiegevorrichtung nach Anspruch 1, wobei der Heizdraht so ausgeführt ist, daß er im Bereich von 0,3 bis 1 A betrieben wird.
6. Wimpernbiegevorrichtung nach Anspruch 1, wobei das Heizelement (114) bei 1,1 V und während eines Zeitraums von mehr als 100 Minuten durch Steuerung der Länge des Heizdrahts verwendet werden kann.
7. Wimpernbiegevorrichtung nach Anspruch 1, die ferner zur Anzeige der Zeit für den Batteriewechsel eine Schaltung zum wiederholten Einschalten / Ausschalten der Anzeigelampe (122) umfaßt.
8. Wimpernbiegevorrichtung nach Anspruch 1, die ferner eine Schaltung zur Änderung der Farbe der Anzeigelampe enthält.

## Revendications

1. Appareil pour onduler les cils comprenant un corps principal (100) ayant une partie poignée (102) et un embout protecteur (110), une batterie (108) disposée dans la partie poignée (102) du corps principal (100), un commutateur de mise en marche (106) disposé à la surface périphérique externe du corps principal (100), un tube chauffant (112) relié au commutateur de mise en marche (106) et une lampe témoin (122) disposée à la partie supérieure du tube chauffant (112) et une brosse (104),  
**caractérisé en ce que**  
on a prévu une partie en silicium fabriquée en un matériau de revêtement sensible à la chaleur reposant sous un élément chauffant (114), et la brosse (104) comprend l'élément chauffant (114), sur lequel est enroulé un câble chauffant, une partie incurvée qui est prévue pour s'adapter à la morphologie des zones courbes de l'oeil et des cils, une surface plate qui est disposée d'un côté de la brosse (104), et de l'autre côté sont prévues des protubérances de sécurité (116) permettant d'exposer partiellement l'élément chauffant (114), et une partie en contact avec le cil (120) étant saillante longitudinalement sur les bords latéraux de la brosse (104).
2. Appareil pour onduler les cils selon la revendication 1, dans lequel la température de l'élément chauffant (114) disposé dans la brosse s'étendant depuis le tube chauffant (112) dans le corps principal (100) est maintenue entre 80° C et 120° C.
3. Appareil pour onduler les cils selon la revendication 1, comprenant en outre une partie en silicium (118) prévue dans la partie supérieure de la brosse s'étendant depuis le tube chauffant (112) et fabriquée en un matériau sensible à la chaleur et ayant un faible taux de transmission thermique de manière à ce que la couleur de la partie en silicium soit modifiée quand l'élément chauffant (114) excède une température prédéterminée.
4. Appareil pour onduler les cils selon la revendication 1, comprenant en outre une lampe témoin disposée à l'intérieur du corps principal (100) pour indiquer un dysfonctionnement du système.
5. Appareil pour onduler les cils selon la revendication 1, dans lequel ledit câble chauffant est destiné à fonctionner entre 0,3 A et 1 A.
6. Appareil pour onduler les cils selon la revendication 1, dans lequel ledit élément chauffant (114) peut être utilisé à 1,1 V et pendant plus de 100 minutes en contrôlant la longueur du câble chauffant.

7. Appareil pour onduler les cils selon la revendication 1, comprenant en outre un circuit pour mettre en marche / arrêt de manière répétitive la lampe témoin (122) pour indiquer qu'il est temps de remplacer la batterie.

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8. Appareil pour onduler les cils selon la revendication 1, comprenant en outre un circuit pour changer la couleur de la lampe témoin.

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FIG. 1

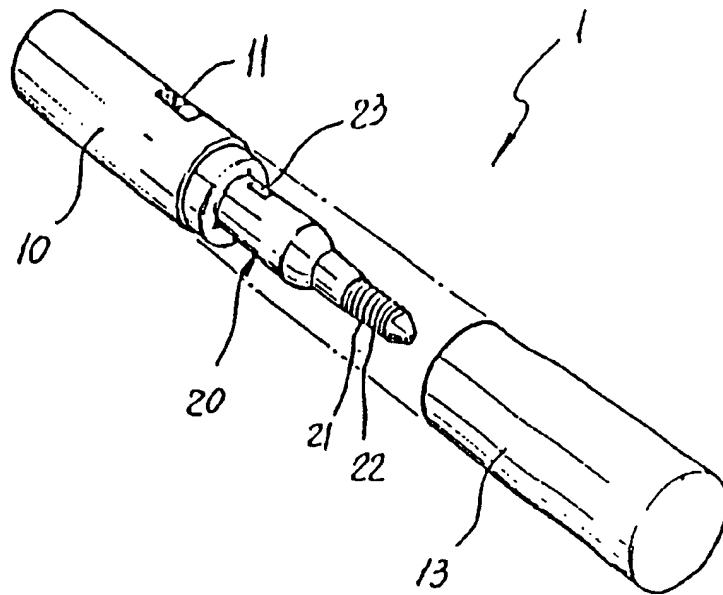


FIG. 2

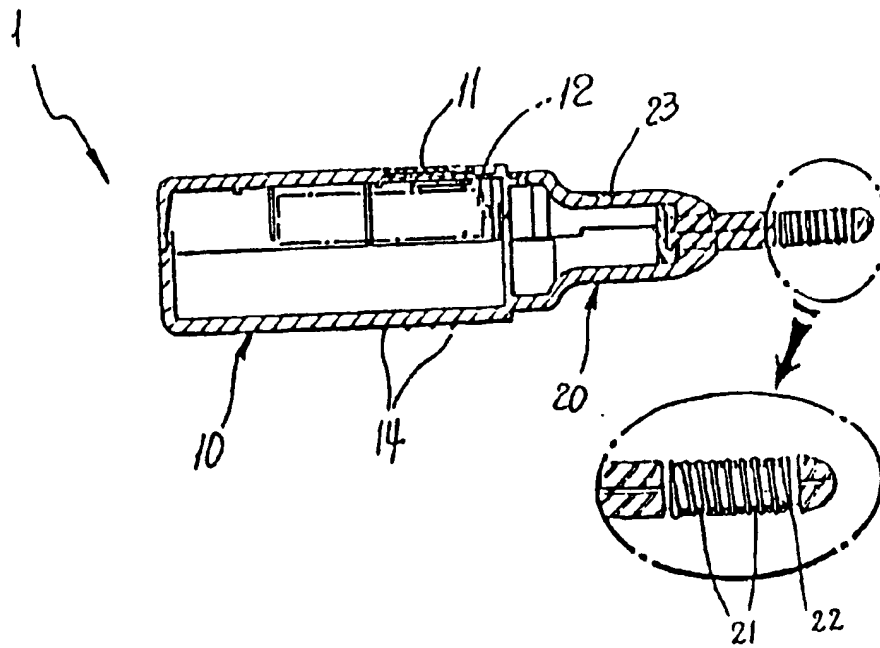
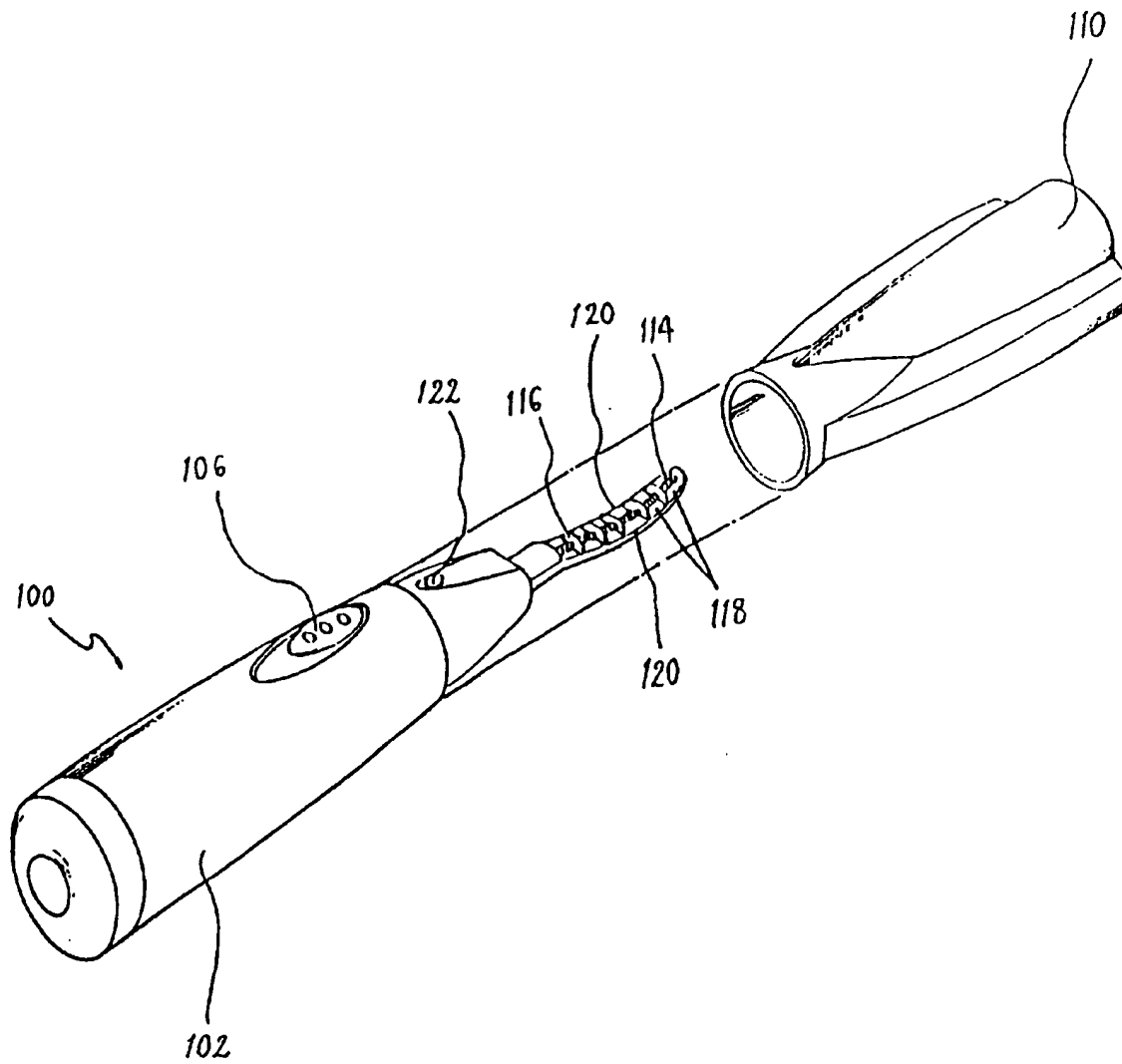
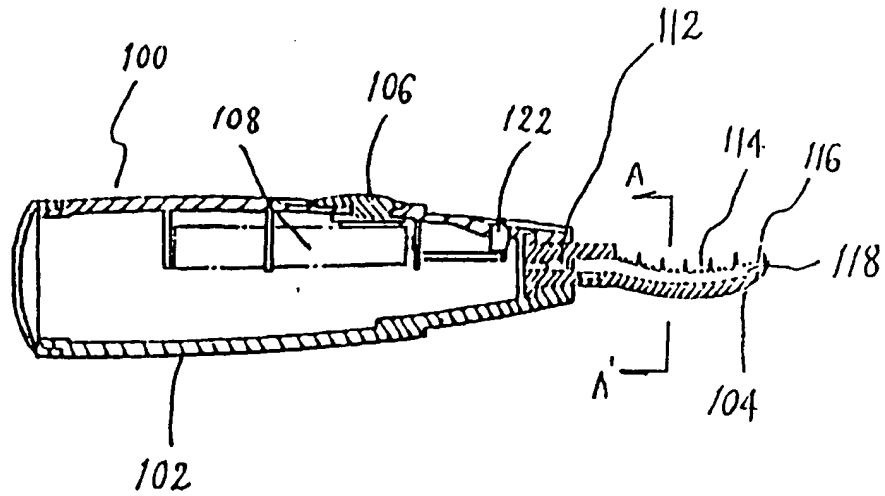


FIG. 3





**FIG. 4**



**FIG. 5**

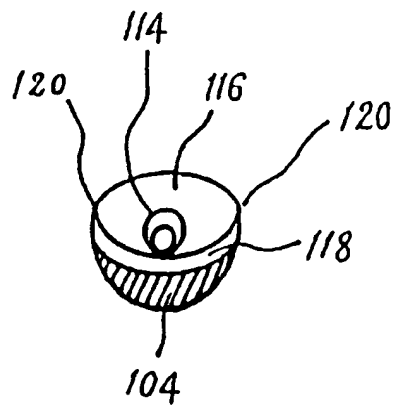


FIG. 6

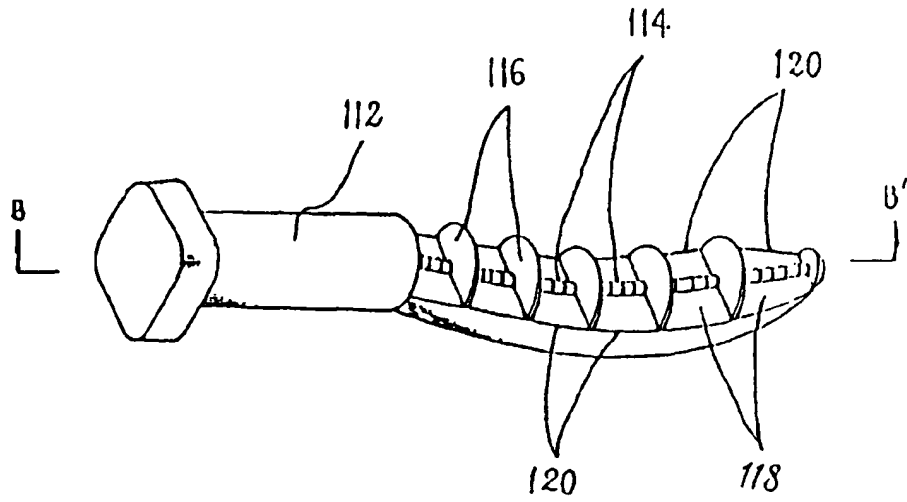


FIG. 7

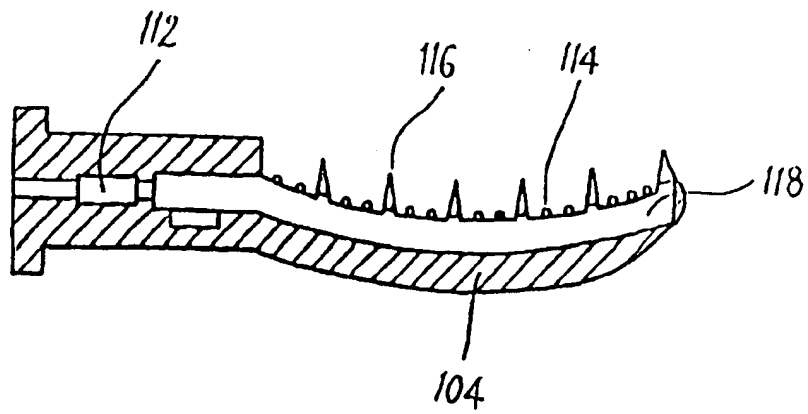


FIG. 8

